



# UNITED STATES PATENT AND TRADEMARK OFFICE

*WMM*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,076	10/27/2003	Ming C. Hao	200209329	3816

22879 7590 07/26/2006

HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER

LAY, MICHELLE K

ART UNIT PAPER NUMBER

2628

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/694,076

Applicant(s)

HAO ET AL.

Examiner

Michelle K. Lay

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

The Appeal Brief filed 04/25/2006 has been entered and made of record. The Final Rejection filed 11/22/2005 has been withdrawn. Claims 1-25 are pending.

### ***Response to Arguments***

Applicant's arguments, see Appeal Brief, filed 04/25/2006, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made, as seen below.

### ***Claim Objections***

Claim 1 is objected to because of the following informalities: The punctuation on line 6 of claim 1 is improper. Examiner suggests the claim to read, "constructing a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary, each pixel block having a set of pixel, and each pixel having a pixel value that visually represents one of the values of the variable." [appropriate markings added for emphasis]. Appropriate correction is required.

Claim 13 is objected to because of the following informalities: The punctuation on line 8 of claim 13 is improper. Examiner suggests the same correction as applied to claim 1 above. Appropriate correction is required.

Claim 20 is objected to because of the following informalities: The punctuation on line 6 of claim 20 is improper. Examiner suggests the same correction as applied to claim 1 above. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. Claims 1, 2, 8, 11, 13-15, 18, 20-22, and 24 are rejected under 35 U.S.C. 102(a) as being anticipated by "Hierarchical Pixel Bar Charts" to Keim et al.

In regards to claim 1, Keim teaches *a method for generating a pixel-oriented graph, comprising* [pg. 257 §3.1]:

- a) ***determining a visual boundary for representing an aggregate of a set of values of a variable depicted in the pixel-oriented graph;***

Dividing attribute for between-bar partitioning. Dividing attribute partitions the data into disjoint groups corresponding to the bars. Dividing attribute, i.e., one for the horizontal axis ( $D_x$ ) and the one for the vertical axis ( $D_y$ ). The dividing attributes ( $D_x$ ) and ( $D_y$ ) is used to partition the data into a small number of partitions [pg. 258-259 §4.1].

- b) ***constructing a set of pixel blocks that represent the values such that the pixel blocks are visually distinguished by the visual boundary,***
  - i. ***each pixel block having a set of pixels,***

- ii. ***each pixel having a pixel value that visually represents one of the values of the variable.***

Fig. 6 shows the general idea of pixel bar charts with the dividing attributes ( $D_x$ ) and ( $D_y$ ). Furthermore, each data item is represented by a single pixel in the bar chart [pg. 257 §3.1]. Therefore, each pixel within each pixel block shown in Fig. 6 represents a value.

In regards to claim 2, Keim teaches allowing the user to select a bar of a pixel bar chart to get the bar expanded and the corresponding data partitioned according to the next level of the hierarchy [pg. 258 §3.3].

In regards to claim 8, Keim teaches specifying dividing attribute hierarchy for hierarchical partitioning of dividing attribute. The hierarchy is a grouping of categorical values or numerical value ranges from bottom to top of the hierarchy [pg. 258 §4.1].

In regards to claim 11, Keim teaches specifying a color attributes for pixel coloring [pg. 258 §4.1].

In regards to claim 13, claim 13 recites the same limitations as claim 1. Therefore, the same rationale used for claim 1 is applied. Furthermore, Keim teaches storing data on memory [pg. 262 §5.1]. Although Keim fails to explicitly teach a display and graphics processor, it would have been obvious to one of ordinary skill in the art that the pixel bar

Art Unit: 2628

chart is displayed on display to the user that would be connected to a computer that comprises a processor to generate the pixel bar charts as taught by Keim.

In regards to claim **14**, claim 14 recites the same limitations as claims 2 and 13.

Therefore, the same rationale used for claims 2 and 13 is applied.

In regards to claim **15**, claim 15 recites the same limitations as claims 8 and 13.

Therefore, the same rationale used for claims 8 and 13 is applied.

In regards to claim **18**, claim 18 recites the same limitations as claims 11 and 13.

Therefore, the same rationale used for claims 11 and 13 are applied.

In regards to claim **20**, claim 20 recites the same limitations as claim 1. Therefore, the same rationale used for claim 1 is applied. Furthermore, Keim teaches the method is carried out via HTML and Java applets over a server [pg. 262 §5].

In regards to claim **21**, claim 21 recites the same limitations as claims 2 and 20.

Therefore, the same rationale used for claims 2 and 20 is applied.

In regards to claim **22**, claim 22 recites the same limitations as claims 8 and 20.

Therefore, the same rationale used for claims 8 and 20 is applied.

In regards to claim **24**, claim 24 recites the same limitations as claims 11 and 20.

Therefore, the same rationale used for claims 11 and 20 are applied.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **3-5, 9, 10, 12, 16, 17, 19, 23** and **25** are rejected under 35 U.S.C. 103(a) as being unpatentable over “Hierarchical Pixel Bar Charts” to Keim et al.

Keim teaches the limitations of claims 3 and 4 with the exception of explicitly teaching determining a location for a line and area. However, in regards to claim **3**, Keim implicitly teaches *determining a visual boundary comprising determining a location for a line in the pixel-oriented graph in response to the aggregate*. The method of Keim specifies a dividing attribute for between-bar partitioning, by allowing more than one dividing attribute, i.e., one for the horizontal axis ( $D_x$ ) and the one for the vertical axis ( $D_y$ ). This implicitly defines a border (i.e. a line) to divides the data into sections (i.e. aggregates) [pg. 258-259 §4.1].

In regards to claims **4** and **5**, Keim implicitly teaches *determining a visual boundary comprising determining a location for an area in the pixel-oriented graph in response to the aggregate*. With the same rationale as applied to claim 3, the dividing attributes ( $D_y$

Art Unit: 2628

and  $D_x$ ) partition the data and thus, as shown in Fig. 6, define areas of data [pg. 258-259 §4.1]. Furthermore, can be seen in Fig. 6, the defined areas are rectangles.

Keim teaches the limitations of claim **9**, with the exception of explicitly teaching replicating one or more pixels in the pixel block. However, in regards to claim **9**, Keim teaches that specific requirements for pixel displays are dense display, i.e., bars are filled completely [pg. 259 §4.2]. The dense display constraint requires that all pixel rows (columns) except the last one be completely filled with pixels [pg. 260 §4.2.1]. Therefore, it would have been obvious to one of ordinary skill in the art that in order to fulfill this constraint, replication of pixels.

In regards to claim **16**, claim 16 recites the same limitations as claims 9 and 13. Therefore, the same rationale used for claims 9 and 13 is applied.

In regards to claim **23**, claim 23 recites the same limitations as claims 9 and 20. Therefore, the same rationale used for claims 9 and 20 is applied.

Keim teaches the limitations of claim **10** with the exception of explicitly disclosing a user selection of the visual boundary. However, Keim teaches specifying a dividing attribute for between-bar partitioning. Dividing attribute partitions the data into disjoint groups corresponding to the bars. Dividing attribute, i.e., one for the horizontal axis ( $D_x$ ) and the one for the vertical axis ( $D_y$ ). The dividing attributes ( $D_x$ ) and ( $D_y$ ) is used to partition



the data into a small number of partitions [pg. 258-259 §4.1]. Furthermore, the system/method of Keim uses a web browser to allow real-time interaction to explore relationships and retrieve data within a region of interest. The user at the client side visually explores the data by dynamically accessing the data through the browser [pg. 262 §5]. Therefore, although not explicitly taught, it is implicit that the user can specify such boundaries via the web browser of Keim.

In regards to claim **17**, claim 17 recites the same limitations as claims 10 and 13. Therefore, the same rationale used for claims 10 and 13 is applied.

Keim teaches the limitations of claim **12** with the exception of explicitly disclosing applying a weight to the visual boundary. However, Keim teaches specifying coloring attributes. Different attributes may be assigned to colors in charts to relate the different coloring attributes and detect partial relationships among them [pg. 258-259 §4.1]. Therefore, it would have been to one of ordinary skill in the art that specifying the coloring around the visual boundary provides an indication to the user of the attribute of association.

In regards to claim **19**, claim 19 recites the same limitations as claims 12 and 13. Therefore, the same rationale used for claims 12 and 13 are applied.

In regards to claim **25**, claim 25 recites the same limitations as claims 12 and 20.

Therefore, the same rationale used for claims 12 and 20 are applied.

3. Claims **6** and **7** are rejected under 35 U.S.C. 103(a) as being unpatentable over “Hierarchical Pixel Bar Charts” to Keim et al. in view of “Designing Pixel-Oriented Visualization Techniques: Theory and Applications” to Keim.

“Hierarchical Pixel Bar Charts” to Keim et al. (further referred to as “Charts”) teaches the limitations of claims 6 and 7 except disclosing location for a circle or curve. However, “Designing Pixel-Oriented Visualization Techniques” to Keim (further referred to as “Techniques”) teaches applying different visualizations of pixel-oriented visualizations.

In regards to claims **6** and **7**, claims **6** and **7** recites the same limitations as claim 1. Therefore, the same rationale used for claim 1 is applied. Additionally, “Techniques” teaches the circle segments technique where the visualization technique is to display the data dimensions as segments of a circle [Fig. 13, pg. 67 §5]. The circle technique inherently applies to a curve, as limited in claim 7.

It would have been to one of ordinary skill in the art to apply the visualization techniques of “Techniques” to the bar charts of “Charts” because the circle segments technique provides a better optimization, especially for larger dimensionalities and the whole data set is better perceivable [“Techniques” pg. 67 §5].

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday-Friday 7:30a-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee M. Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michelle K. Lay  
Patent Examiner  
Division 2628  
07.22.2006 mkl

  
PATENT EXAMINER



KEE M. TUNG  
SUPERVISORY PATENT EXAMINER